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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,563	10/30/2003	Andrew Huibers	P113-US	1117

7590 03/17/2005
Gregory R. Muir
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EXAMINER

DINH, JACK

ART UNIT PAPER NUMBER

2873

DATE MAILED: 03/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No. 10/698,563	Applicant(s) HUIBERS ET AL.	
	Examiner Jack Dinh	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-126 is/are pending in the application.
- 4a) Of the above claim(s) 23-62 and 75-126 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 63-74 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>0305</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1003</u> . | 6) <input checked="" type="checkbox"/> Other: <u>DETAILED ACTION</u> . |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 45-62, drawn to a projection system, classified in class 353, subclass 31.
 - II. Claims 1-44 and 63-126, drawn to spatial light modulators, classified in class 359, subclass 290.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the projection system does not require the specificity of the limitations of the independent claims 1, 23, 63, 75, 87, 99 or 122. For instance, claim 1 being an array of micromirrors each having four predominant sides and being held on the substrate by a plurality of posts, wherein the four predominant sides define two diagonals, and wherein a line between any two of the plurality of posts is not coincident with either of the two diagonals. The subcombination has separate utility wherein the spatial light modulator can be used in other optical applications other than the projection system, such as switching applications.

This application contains claims directed to the following patentably distinct species of the claimed invention: Group IIA, claims 1-22 and 63-74 is directed to a species of spatial light

Art Unit: 2873

modulator wherein each micromirror having four predominant sides and being held on the substrate by a plurality of posts, wherein the four predominant sides define two diagonals, and wherein a line between any two of the plurality of posts is not coincident with either of the two diagonals; Group IIB, claims 23-44 is directed to a species of spatial light modulator wherein each micromirror having four predominant sides, wherein each side is neither parallel nor perpendicular to the edges of the rectangular array; Group IIC, claims 75-86 is directed to a species of spatial light modulator wherein imaginary lines connecting centers of each micromirror in the array form an imaginary grid of rows and columns orthogonal to each other, and wherein the edges of the micromirrors are not parallel to either the rows or columns in the imaginary grid; Group IID, claims 87-98 is directed to a species of spatial light modulator each micromirror held on the substrate by a hinge connected to the micromirror and to two posts on the substrate, each micromirror having an axis of rotation wherein a line drawn between the two posts is not parallel with the axis of rotation; Group IIE, claims 99-121 is directed to a species of spatial light modulator wherein the micromirror plate held via the hinge on a substrate, the micromirror plate being disposed in a plane separate from the hinge and having a diagonal extending across the micromirror plate, the micromirror plate being attached to the hinge such that the micromirror plate can rotate along a rotation axis that is parallel to, but off-set from the diagonal of the micromirror plate when viewed from the top; Group IIF, claims 122-126 is directed to a species of spatial light modulator wherein an array of micromirrors on a die, each micromirror having a mirror plate that has four predominant edges, wherein the angle between the edge of the mirror plate and an edge of the die is neither 0 nor 90 degrees.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claim is generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Gregory R. Muir on 03/01/05 a provisional election was made with traverse to prosecute the invention of Group IIA, claims 1-22 and 63-74. Affirmation of this election must be made by applicant in replying to this Office action. Claims 23-62 and 75-126 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7-21 and 67-72 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 7 and 67, the limitation “a mirror plate attached to the hinge such that the mirror plate rotates along a rotation axis that is parallel to but offset from a diagonal of the mirror plate when viewed from the top of the substrate” renders the claims indefinite. However, claims 7 and 67 depend from claims 1 and 63 which state that “a line between any two of the plurality of posts is not coincident with either of the two diagonals”. It is unclear how possible it is have a line between any two of the plurality of posts is not coincident with either of the two diagonals while at the same time, the mirror plate rotates along a rotation axis that is parallel to but offset from a diagonal of the mirror plate when viewed from the top of the substrate. It is believe that no drawings provided supports such combination of limitations. Claims 8-21 and 68-72 are rejected based upon the rejected base claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1-4, 63, 64, 73 and 74 are rejected under 35 U.S.C. 102(a) as being unpatentable by Yamazaki et al. (US Patent 6,781,742).

Regarding claim 1, Yamazaki (figure 20A, col. 1, lines 30-35) is interpreted as disclosing a spatial light modulator comprising an array of micromirrors on a substrate, each micromirror having four predominant sides and being held on the substrate **901** by a plurality of posts **906**, wherein the four predominant sides define two diagonals, and wherein a line between any two of the plurality of posts is not coincident with either of the two diagonals (since there is no specifics on how the line is drawn between two post, a line drawn between opposite edges of the posts will meet this condition, see figure).

Regarding claims 2 and 3, Yamazaki is interpreted as further disclosing that the shape of the micromirror is square (col. 1, line 30).

Regarding claim 4, Yamazaki (figure 20A) is interpreted as further disclosing that the plurality of posts consists of two posts **906**.

Regarding claim 63, Yamazaki (figure 20A, col. 1, lines 30-35) is interpreted as disclosing a spatial light modulator comprising an array of micromirrors on a substrate **901**, each micromirror held on the substrate by a plurality of posts **906**, each micromirror having four predominant sides and wherein the four predominant sides define two diagonals, wherein a line drawn between any two of the posts is not coincident with either of the two diagonals (since there is no specifics on how the line is drawn between two posts, a line drawn between opposite edges of the posts will meet this condition, see figure).

Regarding claim 64, Yamazaki is interpreted as further disclosing that the shape of the micromirror is square (col. 1, line 30).

Regarding claims 73 and 74, Yamazaki is interpreted as further disclosing the first and second stops **903** for stopping the rotation of the mirror plate when the mirror plate rotates to an ON and OFF state angles.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5, 6, 65 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (US Patent 6,781,742) as applied in claims 1 and 63.

Regarding claims 5, 6, 65 and 66, Yamazaki is interpreted as disclosing all the claimed limitations as described above except that substrate is a rectangular shape and wherein each side of the micromirror is at an angle to the two sides of the rectangular substrate. However, the shape of the substrate depend on mxn micromirror arrays. If m and n are different for a specific application, such rectangular shape would be obvious. In addition, the angle of each of thousands of micromirrors relative to the edges of the substrate would be irrelevant to the micromirror device functionality, as long as all the micromirrors are angled in the same direction. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to angle the micromirrors relative to the substrate, for the purpose of placing the display target at certain desired positions within the projection system for receiving light from the light source.

5. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (US Patent 6,781,742) as applied in claim 1, in view of Islam et al. (US Patent 6,795,605).

Regarding claim 22, Yamazaki is interpreted as disclosing all the claimed limitations as described above except that the substrate has an anti-reflection film on a surface of the substrate. Within the same field of endeavor, Islam (figure 4) is interpreted as disclose the teaching of an anti-reflection film 212 on a surface of the substrate 210. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an anti-reflection

film on a surface of the substrate, for the purpose avoid any unwanted reflections that may cause when the light hit the substrate.

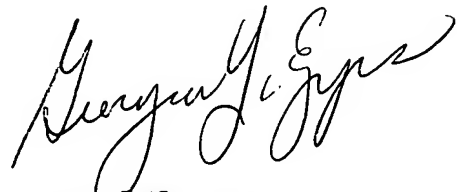
Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Dinh whose telephone number is 571-272-2327. The examiner can normally be reached on M-F (9:30 AM - 6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jack Dinh


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